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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/308,962	09/02/99	CANTERI	C 32431/DOB/1P

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EXAMINER

PECHHOLD, A

ART UNIT PAPER NUMBER

3673

DATE MAILED: 08/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/308,962

Applicant(s)

CANTERI, CARLO

Examiner

Alexandra K Pechhold

Art Unit

3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
 2. ☐ received in Application No. (Series Code / Serial Number) _____.
 3. ☒ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 3673.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 15-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 15 recites the limitations "the step" in line 8 and "the required minimum value" in line 12. Claim 17 recites the limitation "the required one" in line 21, which appears that it should be rewritten as "the required minimum value" as set forth in claim 15, line 12. There is insufficient antecedent basis for these limitations in the claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 15-25, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kapps et al (US 4792262) and further in view of Haekkinen (4567708).

5. Regarding claim 15, Kapps et al discloses all of the limitations of the claimed invention except for the step of constantly monitoring the level of the soil and/or building overlying the injection zone to detect the moment when the building and/or the soil surface begins to raise. Kapps et al discloses a process for strengthening geological formations which, according to column 3, lines 64-68 and column 4, lines 1-9, is carried out using methods known in the art by drilling a plurality of holes about 2-6m in depth and about 20-60mm in diameter into the formations to be strengthened and injecting the mixtures into these holes. Haekkinen teaches in column 3, lines 30-42 the use of a level, taut string, mason's level or other suitable device (not shown) to measure the upward movement. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Kapps et al to include a step of constantly monitoring the level of the soil and/or building overlying the injection zone as taught by Haekkinen, since the use of leveling devices is known in the art of geotechnical engineering and frequently applied to construction projects concerning structural applications where leveling measurement is common practice.

6. Regarding claims 16, Kapps et al discloses holes 2-6m deep in column 3, lines 64-68, therefore allowing the injection to take place at different depth levels.

7. Regarding claims 17 and 23, Kapps et al and Haekkinen disclose the claimed invention except for the different depth levels spaced approximately 1m from each

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other, and adjacent holes spaced 0.5-3.0m from each other. In Examples 3 and 4 in column 6, Kapps et al discloses holes drilled at intervals of 30cm and 5m. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the injection hole spacing of Kapps et al to space the different depth levels approximately 1m from each other and space adjacent holes 0.-3m from each other, since finding the most desirable and effective spacing is a design choice pertaining the particular geological formation, and Kapps et al states in column 3, lines 64-68 that hole drilling methods are known in the art.

8. Regarding claim 18, Kapps et al discloses the claimed invention except for a laser level apparatus to monitor the level of the soil and/or building overlying the injection zone. Haekkinen teaches in column 3, lines 30-42 the use of a level, taut string, mason's level or other suitable device (not shown) to measure the upward movement. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Kapps et al to include a step of constantly monitoring the level of the soil and/or building overlying the injection zone as taught by Haekkinen using a laser level apparatus, since the use of leveling devices, particularly modern day laser level apparatuses, is known in the art of geotechnical engineering and surveying and Haekkinen teaches the use of any suitable device in column 3, lines 30-42.

9. Regarding claims 19 and 24, Kapps et al and Haekkinen disclose the claimed invention except for specifically disclosing vertical holes or holes provided at an angle with respect to the vertical. Kapps et al discloses in column 3, lines 64-68 that the

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process is carried out using methods known in the art by drilling a plurality of holes. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the angle of the hole in Kapps et al to be vertical or at an angle with respect to the horizontal, since finding the most desirable and effective hole angle is a design choice, and Kapps et al states in column 3, lines 64-68 that hole drilling methods are known in the art.

10. Regarding claim 20, Kapps et al discloses a method for strengthening geological formations. It would have been obvious to one having ordinary skill in the art at the time the invention was made to specify in the method of Kapps et al to treat an entire thickness of the soil layers which are compressible or having low bearing capacity, since the purpose of the process of Kapps et al is to strengthen geological formations.

11. Regarding claim 21, Kapps et al discloses in claim 1 a reaction mixture comprising a polyisocyanate component and a polyol component comprising a mixture of an organic polyhydroxyl compound having an OH number of about 100 to 600 and about 0.1 to 5% by weight dihydric alcohol having a molecular weight of 62 to about 150. Kapps et al discloses in claim 6 that the polyisocyanate component is based on crude MDI.

12. Regarding claim 22, Kapps et al discloses examples of suitable polyether polyols in column 3, lines 1-5. In column 3, lines 27-35, Kapps et al discloses the additives of water and catalysts. Kapps et al discloses in claim 6 that the polyisocyanate component is based on crude MDI.

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13. Regarding claim 25, Kapps et al discloses in Example 3 (column 6, lines 24-39) that mixture 1 was first injected, a reaction took place, and then polyol mixture 8 was injected.

14. Regarding claim 27, Kapps et al and Haekkinen disclose the claimed invention except for exactly a 3.44% by weight water content. Kapps et al discloses in column 3, lines 27-29 that a quantity of up to about 5% by weight of water, preferably up to about 4% by weight, may be used. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the about 4% by weight water content of Kapps et al to be 3.44%, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

15. Regarding claim 28, Kapps et al and Haekkinen disclose the claimed invention except for the inner diameter of the tubes. Kapps et al discloses in column 4, lines 1-6 that the reaction mixture can be injected by way of pipe. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inner diameter of the pipe of Kapps et al to be about 10mm, since finding the most desirable and effective inner pipe diameter is a design choice, and Kapps et al states in column 3, lines 64-68 that hole drilling methods are known in the art.

16. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kapps et al (US 4792262) and Haekkinen (4567708) as applied to claim 15 above, and further in view of Schmidt et al (4904125). Schmidt et al discloses in column 7, lines 27-34 that the reaction mixture is heated to about 170 degrees C. It would have been obvious to

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one having ordinary skill in the art at the time the invention was made to modify the process of Kapps et al with the heating as taught by Schmidt et al, since finding the most desirable and effective temperature for the injected mixture is a design choice within ordinary skill in the art.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Matsushita (JP 405320644) discloses a grout composition for ground stabilization. Asao et al (3719050), Arndt et al (4452551), and Creyf (4391926) disclose soil stabilization methods. Mann et al (4761099), Meyer et al (4307980), Meyer (4454252), Cornely et al (4475847), Bailey et al (5436396), Kubens et al (4114382), Kubens et al (4113014), DeBoodt et al (4575391), and Mann et al (4715746) disclose processes for strengthening, consolidating, and sealing geological formations. Crambes (4832535) discloses a process for soil treatment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Pechhold whose telephone number is (703) 305-0870. The examiner can normally be reached on Mon-Thurs. from 7:00am to 4:30pm and alternating Fridays from 7:00am to 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen Lillis, can be reached on (703)308-3248. The fax phone number for this Group is (703) 305-3597.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1113.



Eileen Lillis
Supervisory Patent Examiner
Group 3600

AKP
8/21/00